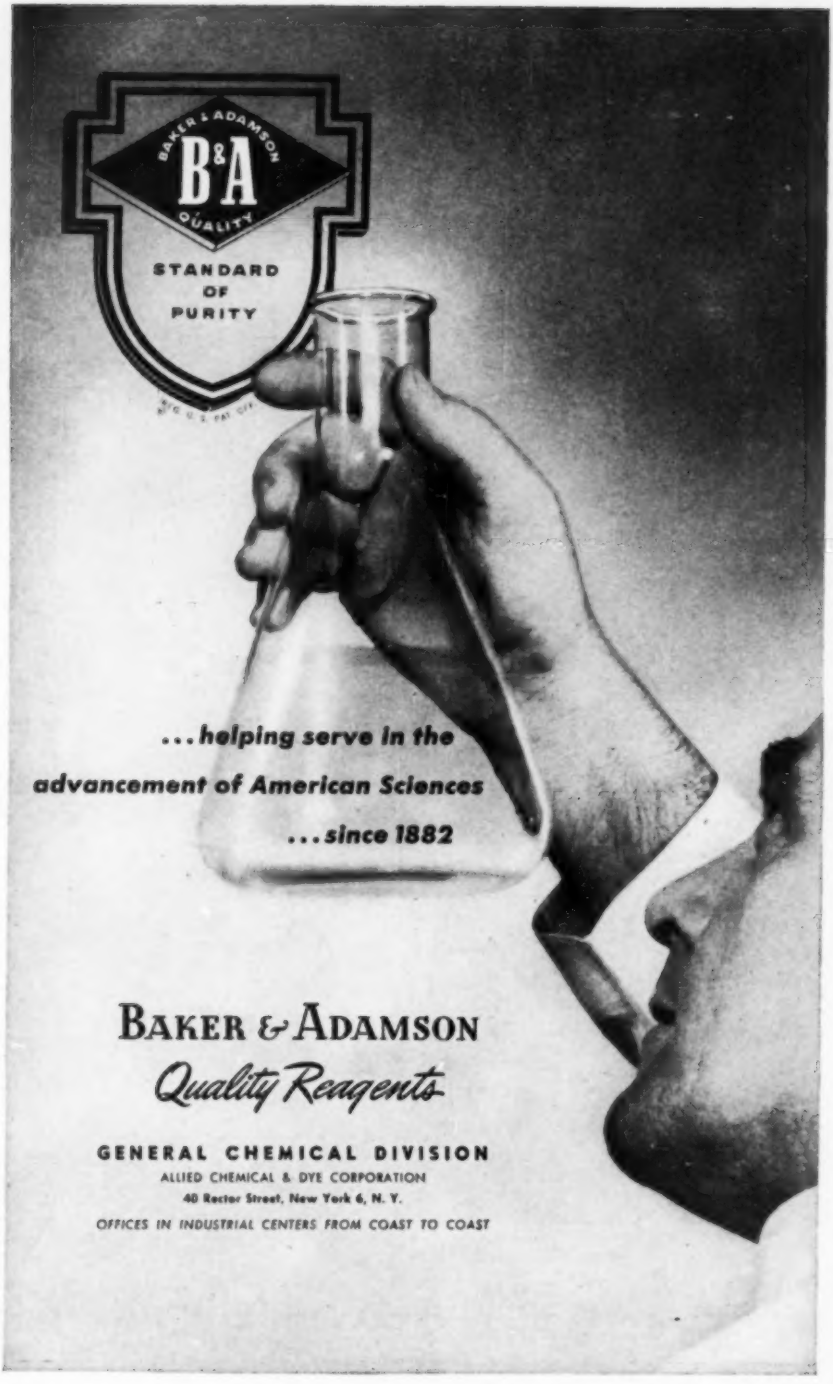
THE CHEMIST

FEBRUARY 1951 VOLUME XXVIII No. 2

BRUCE M. BARE, F.A.I.C.

Chairman, Chicago Chapter

(See Page 39)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SCHEDULED FOR EARLY ISSUES

The Increasing Responsibilities of the Chemist, by Ralph Lamenzo, F.A.I.C.
Employment Project News
The Education of Chemists, Dr. M. L. Crossley, Hon. AIC.
Award of Honorary Membership to Dr. Alexander Silverman, F.A.I.C.
The Chemist and His Neighbors, James G. Vail, F.A.I.C.
Chemistry: When? What? How? Dr. Alexander Silverman, F.A.I.C.

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Cover Picture

Bruce M. Bare, chairman of the Chicago Chapter of THE AMERICAN INSTITUTE OF CHEMISTS, is district sales manager of Sharples Chemicals, Inc., 80 E. Jackson Boulevard, Chicago 4, Illinois.

He received the A.B. degree, summa cum laude, from Gettysburg College, Pennsylvania, and was elected to Phi Beta Kappa, in 1936. His first position was in the Fabrics and Finishes Division of E. I. du Pont de Nemours & Company, Parlin, New Jersey, where he did research on lacquers and lacquer solvents. In 1938, he joined Sharples Chemicals, in Chicago, where he worked with sales and development of chemicals used in the manufacture of lacquers, enamels, varnishes, synthetic resins and other products related to industrial coatings. He was granted leave of absence for military duty in February, 1942. In the U.S. Army's Chemical Corps, he served in the Middle West on problems relating to the production of incendiaries and other chemical munitions. He then became staff officer with the Commanding General, VII Bomber Command, based on Saipan and Okinawa, and was a member of the special intelligence team which accepted the surrender of Northern Ryukyus and studied the military installations there. In 1946, he returned to Sharples Chemicals as district sales manager.

Mr. Bare is a member of The Chemists' Club, New York, the American Chemical Society, and the Chicago Drug and Chemical Association.

He is actively interested in the profession and defines the objectives of the Chicago Chapter for this year, as activities designed "to continue the previous studies dealing with the economic status of the chemist, employment practices, and professional standards, with special emphasis on bringing about a better understanding and a closer bond between industrial management and the employed chemist."

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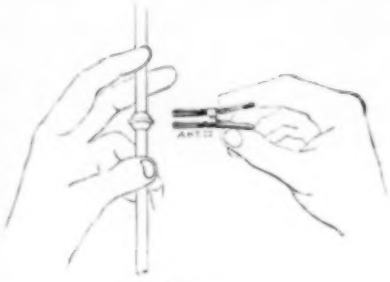

Fig. 1.
Showing appearance of Sizes 12 and 18 and method of attaching to joints. Parts held securely by spring upon release of finger pressure.

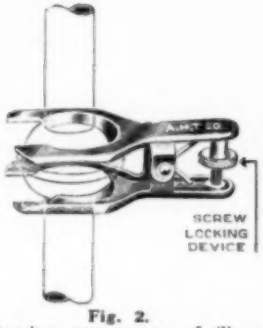

Fig. 2.
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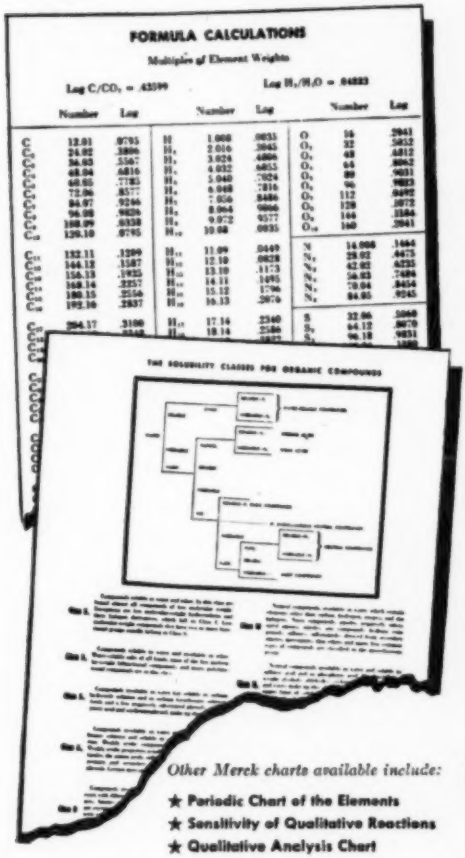

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EDITORIAL

Mr. Chemist—Have You Thought About Yourself?

Dr. Hans O. Kauffmann, F.A.I.C.

Director of Research, Buffalo Electro-Chemical Co., Inc.

IT WAS once remarked that if one enters a room and is faced by a group of worried looking men, bent over and wearing glasses, they are undoubtedly chemists. Let's skip over their physical appearance and concern ourselves for the moment with the possible reasons for their worried looks. If these worries are legitimate worries concerned with the mysteries of science, let's skip over those. Our chief concern is a more personal worry.

There comes a time in the life of a "practicing chemist" when he looks up and sees himself objectively with relation to his career. He may feel varying degrees of satisfaction, or he may reluctantly admit a discouraging feeling of staleness or frustration. Let's skip over the first case and concern ourselves with the latter case.

Why is a chemist not satisfied?

Perhaps for the sake of expediency he has undertaken work in a field of chemistry which was not in the realm of his primary interests. The force of circumstances have made it inadvisable for him to seek a position offering what he really liked.

Another chemist started his career with a general interest in chemistry and at that time had no definite leaning toward any particular field. Some new developments have now captured his interests and make his established position increasingly unappealing and lacking in stimulation.

Many times a chemist feels that he works very hard and effectively, yet his efforts are not rewarded by promotion or acceptable salary adjustments.

There are, of course, other causes of dissatisfaction, but most of these will in some measure fall in the above classifications.

Once the feeling of dissatisfaction manifests itself, the time is ripe for the chemist to analyze the situation and himself. He should clarify his aims, objectives and abilities in his own mind. Earnest thinking and realistic evaluation will give the issue form and many times suggest the proper solution.

It is rarely impossible to make a change either in your position or in yourself. Undoubtedly, it takes courage, but it is stimulating and offers a great incentive.

N.Y. Academy of Sciences

The New York Academy of Sciences held its 133rd annual meeting at the Waldorf-Astoria Hotel, New York, on December seventh. Ten foreign scientists were elected to Honorary Life Membership and one-hundred and six scientists were elected as Fellows. Dr. M. L. Crossley, Hon. AIC, retiring president of the Academy, and Dr. David B. Steinman, designer of the Henry Hudson Bridge and the Hell Gate Arch, spoke at the dinner. Dr. Willis A. Gibbons, F.A.I.C., associate director of research of the United States Rubber Company, was elected president of the academy for 1951.

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Pittsburgh Conference

Speakers at the 1951 Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, to be held in the William Penn Hotel, Pittsburgh, Pa., March 5th to 7th, include: Dr. N. Howell Furman, president of the American Chemical Society; Dr. Walter J. Murphy, Hon. AIC, editor of *Industrial and Engineering Chemistry, Analytical Chemistry,* and *Chemical and Engineering News*; Dr. M. G. Mellon, Purdue University, and Dr. G. H. Dieke, Johns Hopkins University.

Moore Arranges Conference

Dr. Maurice L. Moore, F.A.I.C., is national secretary of Alpha Epsilon Delta and handled all of the arrangements and details for the Lake Placid Conference, the first national conference on premedical education, October 21-22, 1950. Dr. Moore is director of the research and development laboratories of Smith, Kline and French, Philadelphia.

Staff Addition

The Mallinckrodt Chemical Works, St. Louis, Missouri, announces the addition of Robertson B. Clark to their executive sales staff. He was recently president of the Clark Drug Company, Phoenix, Arizona.

Taylor Now With MCA

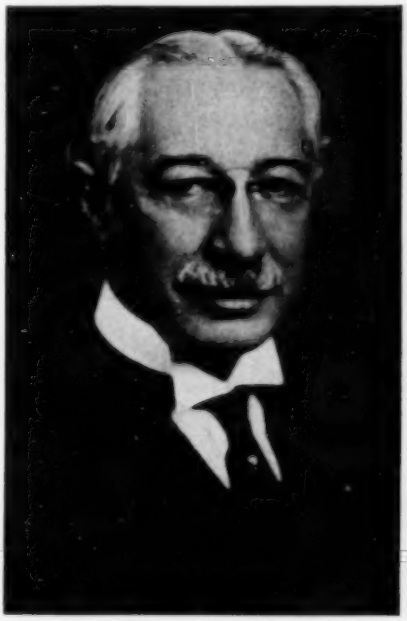
Robert L. Taylor, F.A.I.C., formerly editor of *Chemical Industries,* is now executive vice president of the Manufacturing Chemists Association.

A Chemist Looks on Life

Jerome Alexander

(Address accepting Honorary Membership in THE AMERICAN INSTITUTE OF CHEMISTS, January 25, 1951)

IN THE first place, allow me to express my profound thanks and sincere appreciation of the great honor you have seen fit to bestow upon me. In the list of those who have been awarded Honorary Membership in THE AMERICAN INSTITUTE OF CHEMISTS are such men as Charles F. Chandler, Ira Remsen, John J. Abel, Harvey W. Wiley, Edward C. Franklin, Moses Gomberg, Leo H. Baekeland, and Maximilian Toch, besides many other good friends of eminence, some living, some dead, all of them long admired and revered. I feel extremely humble as a simple individual among so many giants.



Jerome Alexander

As a background to this personal aspect, looms the important fact that THE AMERICAN INSTITUTE OF CHEMISTS maintains that chemistry, like law, medicine, and engineering, is one of the learned professions, and thus carries with it the obligation of high ethical standards in our relations with fellow professionals and especially with clients, employers, and the general public. To be respected by his fellows, a chemist must practise the principles expressed in the motto: "Noblesse oblige". The nobility of our profession imposes on us high moral standards, and this is a canon which THE AMERICAN INSTITUTE OF CHEMISTS represents, supports, and demands.

However, an occasion like this gives one a chance to say publicly many things which otherwise he might discuss privately, if at all. It

recalls the man who at first demurred at making an address, but finally consented with the remark: "I have so many interetsing things to tell you, that I want to listen to myself." But I am chastened when I recall the story of that other man who, when called upon to make an extemporaneous speech, began by saying: "I am so embarrassed that I do not know what to talk about:" whereupon a small boy down front blurted out: "Talk about one minute." I trust that you will bear with me somewhat longer than that, for, to use the words of Tennyson's "Ulysses", "always roaming with a hungry heart, much have I seen and known." Looking back through the long vista of years granted to me, with many diversified interests, there are many things which I could discuss with my fellow chemists.

"Facts" and Their Uses

Let me begin with a general comment on our modern education which leads to college and university degrees of diverse alphabetical cadences, but which all too often fails to arouse an omniverous hunger for knowledge not only in science, but also for art, music, literature, history and social responsibilities. A narrowly educated scientist can thus lose much of life. One of our other foibles is the worship of the word "fact", which means etymologically "something that has happened" and is often bolstered up into the expression "actual fact." Science lives and grows on experimental data called facts only when these are properly coordinated and their real significance is assessed. This is illustrated by the following statement of the great English physician, Sir T. Clifford Allbutt, in "The Lancet" of Oct. 27th, 1906:

> "An apple falls from a tree, everybody's fact; it was Newton's large imagination that saw in it a symbol of universal gravitation. Darwin may have collected no greater pile of facts than some other naturalists; at first, indeed, specialists for the most part fought against him; but Darwin saw the facts common to him and to them in the light of a vast imagination. Much of the work which is done in our laboratories and dignified, not improperly perhaps, with the title of research, much plotting of curves, much watching of levers and thermometers, nay not a little morphological dissection and cabinet-making, are really little more than clerk's work. To be no more than learned in facts and opinions, with whatever skill in methods is not to make knowledge. Bundles or files of facts are not science until the man with the formative, let me say the creative, insight comes along, who by the fusion of intellect and imagination seizes upon the significant facts, those which give him the lines on which to build up aggregates of materials into a conceptual edifice."

Facts in Court

In his "Essay on Criticism", Alexander Pope speaks of those who have "loads of learned lumber in their heads." But the importance of being able to assemble quickly and utilize rightly facts we all know, may be illustrated by a couple of cases which arose in the course of my consulting practice. In response to a long distance telephone call received one even-

ing at my home, I met a trial lawyer (whom I will call Mr. X) and his clients the following evening when they arrived in New York, on what he said was a most urgent matter. And it was—for their case had been set down preemptorily for trial next morning. Because of an office error at the attorney of record, this word reached them only two days earlier. It appeared that the spectacular prohibition sleuths, Moe Smith and Izzy Einstein, had raided a brewery up in New York State and had sent samples of the beer to the Government laboratory, which found more than ½ per cent of alcohol. So I said to Mr. X: "Since you are the defendants, the Government will have to put in their case first. All I can do is to be like those two Romans who helped Horatius hold the bridge. I'll stand at your right hand, and we will see what we can do on cross examination—it is our only chance." Moe and Izzy appeared in person, and said that they had put the samples of beer into sterile bottles sent them from Washington, and had dropped into each bottle a "poison tablet" which they thought was "mercury" but which would be identified by the Government chemist. The bottles were then sealed tight with crowns, marked with identifying labels, and sent to the laboratory in New York. All that I could get out of them on cross examination was that it was quite hot weather at this time. Then the Government chemist took over, and said that the "poison tablets" were mercuric chloride, and that he had tested every bottle and found it present. He then gave the results of his determination of alcohol, running from 2½% to 3½% alcohol, and produced the bottles. Since the legal limit was then ½% of alcohol, the U.S. District Attorney simply said: "We now offer these bottles in evidence", and with a wave of his hand said to Mr. X: "Your witness!" Mr. X looked at me blankly, and I said to him: "Since these bottles are in evidence, it is my privilege to look at them, is it not?" "Of course", he said; "look at them if that is going to do you any good." So I went over and looked at the bottles, which had been lined up before the Judge. After a quick glance, I came back and whispered in Mr. X's ear: "We've got them where the hair is short." "Quick, tell me what it is", he said; but I replied that there was no time for an explanation, and that he would have to allow me to direct the cross examination of the witness through him, since I had no right to speak in Court. First we got the chemist to repeat his affirmative tests for mercury in each bottle; and then we asked him if he knew the antidote for mercury poisoning. After trying to wriggle out because he was not a physician, he had to admit that every druggist's almanac, first-aid

book, and Boy Scout Manual said it was things like white of eggs and milk, and that this was known to housewives to say nothing of chemical experts. He then admitted that egg white and milk owe their action to proteins which made an insoluble compound with mercury and thus removed it from activity, and also that beer contains protein. Pointing to the bottles, we asked: Isn't there a precipitate at the bottom of every one of these bottles?" He had to admit there was. "And are not some of these bottles fermenting right now, in court?" They were. We could hear the gas still escaping. Since nine days of hot weather had elapsed prior to the first test, the trial Judge quickly saw the import of these admissions, and said: "Gentlemen. I am going to adjourn this case until next Friday morning. In the meanwhile I want the two chemists to make a redetermination of alcoholic content of each of these bottles." We did so, and found that every bottle had changed. Where live yeasts were still at work, the alcohol had increased. Where the acetic ferment had taken over, the beer was "sour", and the alcohol practically zero. Obviously it was impossible to say what was the alcoholic content of the beer when the samples were taken at the brewery.

Another case never reached court. One of our fellow chemists sent a client to me who claimed that by some error or other poisoned coffee had been delivered to him by a large importer. He roasted the green coffee and sold it to hotels and restaurants, after first testing out every roast himself. He said that many of his customers had been made ill, his whole business was ruined, and that he himself had been poisoned. The lawyers in charge of the case said that all we had to do was to prove the presence of poison, and they would collect heavy damages. I asked the man if he had been treated by a physician, and whether I might speak with the doctor. "Of course, " he said; "this is his office hour, and I'll introduce you to him on the phone." The doctor in a general way confirmed the man's story, but said that he had not tried to identify any poison. "He was sick and suffering", the doctor said; "I treated him, and he got well. That was my only interest." Upon this partial confirmation, I asked for samples of the "poisoned" coffee, and then began to imagine how the poison got into it. Possibly a ship with a hold full of coffee bags had some ore concentrate on an upper deck, and some of this might have been washed down or had dusted down on the coffee. However, tests showed the absence of heavy metals, arsenic etc., and it then became possible that I might have to test for the many drugs coming from South America. So I bought some guinea pigs to try to observe the gen-

eral nature of the "poison", and found that even if I gave them an equivalent of twenty-five cups of coffee for a man, all they did was to squeak for more carrots and lettuce. When my client was faced with these facts, he said that I must have the wrong samples because, as the doctor had said, there was no doubt but that he had been poisoned. He brought in a second set of samples, and the guinea pigs said "no poison." So I told him that I could not advise the lawyer to bring suit—and he wrote me a special delivery letter.

Then I had a "hunch". I rang up the doctor, and after recalling to him our earlier conversation, asked him point blank whether he was not treating his patient for syphilis. Naturally, the doctor said that he could not reveal anything given him in professional confidence, until I reminded him that I, too, was a professional man and would hold the facts in professional confidence. When the doctor admitted that my surmise was correct, I begged him to examine the man as soon as possible and see whether or not his mind had been affected by the disease, since this was something beyond my own professional scope. Three days later the doctor phoned me and thanked me profusely, saying: "I have had him committed to a mental institution." This experience recalls the definition of diagnosis as "the art of shrewd guessing", given me by my friend, the late Prof. Jesse G. M. Bullowa; and it shows that a chemist cannot take anything for granted, but must assemble data and judge from his own determinations and background.

Facts in Sociology

Let us now consider a wide sociological question. Apart from the very young and the aged, and apart also from the relatively small percentage of idle rich, and of various types of swindlers and robbers, most people in the world are workers. Despite the vociferous "demands" of highly paid spokesmen, "organized" labor does not constitute a major number of all those who work; and the rights of retired workers living on well-earned pensions, as well as of widows and orphans are entitled to fair consideration. Today we all get vastly more for much less physical effort. The ancient prayer: "Give us this day our daily bread", was for mere subsistence; and though today we use the same words, we expect a great deal more—even cake, ice cream, autos, radio, television.

The great advances in technologies of all kinds, the results of which we now enjoy as a birthright, are due mainly to chemists, engineers, inventors—to scientists of all kinds; and also to the many far-seeing investors, business men and bankers who took the great risks inherent in new ventures. We hear much of the few who are fortunate enough to make a big success, but we hear little of those

who earn modest returns, and nothing of those who lose everything. The world hears little of the scientists who master-minded most of these developments; their financial rewards are not yet commensurate with their important services. Many of these men, like Thomas Alva Edison, did not have a college degree, and it is evident that degrees do not necessarily show how "hot" a person is, unless they are degrees on a clinical thermometer. A few years ago the president of the American Association for the Advancement of Science said that neither he nor any of his surviving predecessors could get a license to teach science in a high school in New York because a law had been passed making *a degree in pedagogy* a prerequisite. This triumph for the pedagogs gives no assurance that licensed teachers can arouse in their pupils the enthusiasm which is a prerequisite for learning.

There is a French aphorism which says: "If you want to make a rabbit pie, first catch a rabbit." Thanks mainly to our scientists, we have caught many a rabbit. The argument nowadays is how to apportion the pies, and this difficulty is inherent in human nature as shown by the following quotation from the "Latter-day Pamphlets" of Thomas Carlyle, published (1850) just one hundred years ago. After supposing that swine (i.e., four-footed swine) could jot down their notion of the Universe, Carlyle gives ten Pig Propositions, some of which are: "(1) The Universe, as far as sane conjecture can go, is an immeasurable Swine's-trough, consisting of solid and liquid, and of other contrasts and kinds;—especially consisting of attainable and unattainable, the latter in immensely greater quantities for most pigs. (2) Moral evil is unattainability of Pig's-wash; moral good, attainability of ditto. (3) 'What is Paradise, or the State of Innocence?' Paradise, called also State of Innocence, Age of Gold, and other names, *was* (according to Pigs of weak judgment) unlimited attainability of Pig's-wash; perfect fulfillment of one's wishes, so that the Pig's imagination could not outrun reality; a fable and an impossibility, as Pigs of sense now see. (4) 'Define the Whole Duty of Pigs.' It is the mission of universal Pighood, and the duty of all Pigs, at all times, to diminish the quantity of unattainable and increase that of attainable. All knowledge and device and effort ought to be directed thither and thither only: Pig Science, Pig enthusiasm and Devotion have this one aim. It is the Whole Duty of Pigs. (9) 'What is justice?' Your own share of the general Swine's-trough, not any portion of my share. (10) 'But what is "my" share?' Ah! there, in fact, lies the grand difficulty; upon which Pig science, mediating this long while, can settle absolutely nothing. My share—hrumph!—my

share is, on the whole, whatever I can contrive to get without being hanged or sent to the hulks."

Let up hope that we have made some advances since then. But, according to what Dr. Harold G. Moulton of the Brookings Institution said in response to a question I put to him, the benefits of technological progress have not yet been passed on *sufficiently* to the average person. Such passing on, he said, could best be done by lowering prices, for this would immediately and equally benefit everyone, rather than by raising wages which would benefit only limited groups because wages could not everywhere advance at once and *pro rata*. However, the appealing demands of organized labor for "more money" has set a pattern which is forcing many other groups to organize and make demands. But widows, orphans, and aged pensioners who can not organize or increase their income, are the victims of these pressure groups. Prices have been lowered only where technologists have made great advances, or where government regulation has forced entrenched interests to take less.

Facts Shape Career

"There is a divinity that shapes our ends, rough-hew them how we will". My boyhood ambition was to go to West Point and become an engineer. Then an increasing interest in natural history seized me, and I wanted to become a physician so that I could best help people. The idea of making money seemed repugnant to me; the work was to be its own reward, and at an early age I used to witness major operations, for I was quite tall and was beginning to develop a moustache. A medical student who later on became a famous diagnostician practised bandaging on me —and I did the same on him. Another who helped me dissect a cat, became editor of the *American Journal of Surgery*. Once while watching a trepanning operation, a bearded physician who came in late said to me: "Doctor, have they removed the button yet?" I nearly died of embarrassment.

But on graduating from college I had to go to work in an industry dealing with colloidal substances—glues, gelatine, sizings, colors and the like. Nevertheless one of my "besetting sins" continued to be an interest in biology and medicine, and my master's thesis, written in 1898, was entitled "The Importance and Trend of Recent Work on the Chemistry of Life and the Products of Life." I had been activated by the work of E. Buchner who in 1895 reported that he had ground up yeast with sharp sand so as to destroy its cells, and had squeezed out a cell-free extract or press-juice called "zymase" that converted sugar into carbon dioxide and alcohol. This experiment resolved the apparent conflict between followers

of Pasteur and of Liebig and Berthollet. Pasteur was right in maintaining that the microorganism is necessary, but the others were also right in maintaining the existence of chemical changes at a lower level of structure, which we now know are mediated by specific catalysts called enzymes—this originally meant *in yeast*.

With the development of X-rays and radioactivity there came the increasing necessity of considering material phenomena on the basis of all successive levels of material structure as found in matter. This means that in order to understand nature, scientists must have depth as well as breadth of mental focus, something as yet not fully realized by all scientists and teachers of science.

Since my industrial work involved colloid phenomena of many kinds, I secured a copy of a book called "Zur Erkenntnis der Kolloide" by Prof. Richard Zsigmondy of Goettingen. Finding the German difficult, I began to write out an English translation for my own use; but before finishing the second chapter I realized the pioneer importance of the book and in 1909 published the translation under the title of "Colloids and the Ultramicroscope." The field of colloid chemistry rapidly ramified, despite the determined opposition of stoichiometric fundamentalists who would not look above the atom-molecule level. At the old Chemists' Club in Mendelssohn Hall in West 55th St. the genial Dr. Leo H. Baekeland used to tease me by remarking on hazy days: "Fine colloidal weather we are having, Alexander", to which I would reply: "That is truer than you know, Baekeland". And as late as 1922, the great Jacques Loeb told a mutual friend that in a few years nothing would be heard of colloid chemistry. However, in 1927 Zsigmondy and The Svedberg got Nobel prizes for work in colloid chemistry.

The applications of colloid chemistry and catalysis to biological and medical problems were too fascinating to drop, although only some evenings and holidays could be devoted to them. As an outcome of work demonstrating the role of protective colloids in milk, papers were presented by invitation before the New York Academy of Medicine and the American Medical Association at its 1910 meeting in St. Louis. When no one got up to discuss this latter paper, I sat disconsolate. To my surprise, after the meeting, a fine looking physician who introduced himself as Dr. Sedgwick congratulated me, and in reply I said: "It is most kind of you, but evidently my paper was a complete flop. No one got up to discuss it". Dr. Sedgwick guffawed and said: "You deserve extra congratulations for this, for the Pediatric Section is one of the most talkative in the A.M.A., and if any one of these men knew what you were talking about, he could still

be up there discussing it. You shot way over their heads. Now I am professor at the University of Minnesota Medical School, and I came to ask you to show me and my associates your ultramicroscope and tell us about colloids. We know that they are most important." As a consequence, in my small room in the hotel that evening, I gave an impromptu talk and demonstration to about fifteen professors of medicine.

Just at this time, Dr. Harvey W. Wiley assumed that the highly necessary and beneficial Food and Drug Act gave him arbitrary powers to issue "standards" for all kinds of foods, though the Act was intended to prevent fraud and to prohibit harmful or poisonous ingredients, and not to fix the percentage of apples in apple pie. Thus, Wiley said that ice cream could contain only cream, sugar and flavor, this last including fruits and nuts. Wiley insisted that French ice cream be sold as "frozen custard" because it contains eggs, and he brought suit against a small ice cream manufacturer in Washington, who had ½ per cent of a protective colloid, gelatin, in his product, a generally used and necessary ingredient. I volunteered to serve the defendant, and meeting Dr. Wiley in New York offered to demonstrate to him that in this case he was in error. However he refused and forced the case to trial with a large and impressive string of government witnesses, none of whom knew anything about the actual function of protective colloids, and but little about the science of cookery; and he met his first defeat under the Food and Drug Act, a beneficial law, because he was wrong.

Facts in Biology and Medicine

For many years I had been seeking a collaborator to follow catalysis into biology and medicine, and finally found one in Dr. Calvin B. Bridges, the great geneticist, under whom I took what amounted to a private course when we met three nights a week at my home. The results appeared in Vol. II of "Colloid Chemistry, Theoretical and Applied" (1928) in a joint paper entitled "Some PhysicoChemical Aspects of Life, Mutation and Evolution", in which we maintained the view that the simplest living unit is a catalyst particle capable of catalyzing its own production, that is, *autocatalytic* particle which might even be a molecule, a *Moleculebiont*. Pursuing these notions still further, I was led to an explanation of antibody formation, and even of reproduction, at the molecular or near-molecular level, based on the assemblage of polar particles at the specific surface of a catalyst which serves as a master-mold or *template,* to use the apt engineering term applied by Dr. Stephen Miall in his editorial (1932, "Chemistry and Industry") dealing with my

paper which had finally been published in "Protoplasma" in 1931. To illustrate this notion, now generally accepted as the reasonable one, I would press a piece of metal foil against a coin, and the near surface of the foil would take the *reverse* pattern of the coin, giving a specific "antibody". But the off surface of the foil gives a *duplicate* pattern of the coin surface, illustrating reproduction. Publication of these notations in this country was blocked by "high-brass" referees; but immediately after my publication in Germany a friend of one of the referees honored the notion by publishing a paper maintaining the same view, and more recently this has been termed in *Science* of Sept. 8th, 1950, the "Concept of Complementarities". Finally, in 1948 there was published "Life—Its nature and Origin", in which the thesis I had advanced half a century earlier on the basis of the slim knowledge then available, was supported by many of the enormous advances that had been made in biochemistry, catalysis, enzymes, genetics, and embryology.

Though all morphology and physiology depend upon the catalytic production of specific substances at specific rates in specific places by specific catalysts, I abandoned my initial intention to call this book "Life—A Catalyst Entelechy". True, the word "catalysis" had become better known because of the widespread use of "cat-crackers" in the petroleum industry; but very few knew that Aristotle had coined the word "entelechy" to express the observable fact that every seed and egg carries within it a distant objective. By supplying the material mechanism underlying the philosophical concept of an "entelechy", the principle of the catalyst direction of life lifted the word "entelechy" from the limbo of speculation into the free upper air of experimental science.

Facts in Religion

In conclusion, let me refer briefly to what I consider a most important question — the relation between science and religion. Religion has been defined (*Standard Dictionary*, 1913) as "a belief in an invisible superhuman power (or powers) conceived of after analogy of the human spirit, on which (or whom) man regards himself dependent, and to which (or whom) he thinks himself in some degree responsible, together with the feelings and practises which naturally flow from such a belief." Religion is thus something common to all the numerous and differing theologies, creeds, and religious organizations based upon it. The inscrutable superhuman power is generally termed "God", or "The Creator". Thus a person may be profoundly religious without accepting the theological chronology of Archbishop Usher, who early in the 17th century figured out that the

world was created in the year 4004 B.C., that Creation began on Monday, Oct. 23rd, and ended on Saturday, Oct. 29th at sundown, following the creation of man. Robert G. Ingersoll once wrote: "Our ignorance is God; what we know is science". Pursuing this notion, it is evident that as we enlarge the frontiers of our knowledge we correspondingly enlarge the frontiers of our ignorance, thereby coming more and more into contact with the unknown and unknowables that Ingersoll termed "God".

Actually, the scientist's work is of the most profound religious significance, for it increasingly reveals the wonders inherent in the Creation. So far as present knowledge goes, when "in the Beginning, God created the heavens and the earth", the basic units were not the ninety-odd chemical elements, but were protons, neutrons, electrons and positrons. Under earth conditions these units form only a limited number of atoms; and these atoms have limited powers of combination. The ability of chemists to make many compounds not found in nature is based on powers existing in matter since the Beginning. Basically we create nothing, but simply assemble units and let nature take her course, and thus reveal some of the possibilities involved in the Creation. Sir Francis Bacon, writing "Of Atheism", said "A little philosophy inclineth man's mind to atheism, but depth of philosophy bringeth men's minds about to religion." Commenting on Bacon's statement, George Santayana added that "the God to whom depth in philosophy brings back men's minds is far from being the same from whom a little philosophy estranges them." Increasing knowledge brings increasing faith, even though the ultimates of both mind and matter are beyond human comprehension; but every human being lives his life in a way that proves his faith in their existence. Science deals with what God says in nature, and nature includes the human mind. It is evident, therefore, that science supports true religion. This is expressed in—

A Scientist's Psalm

Almighty Power! Too vast to be
Compassed by human mind or hand,
With loving awe we reverence Thee,
Striving to see and understand.
Within the atom's ordered maze,
Earth's lumined book, writ to be read,
Beyond the star-dust's far flung haze,
We seek Thy works with joy, not dread.
Our souls, which by Thy richest grace,
Have waked to justice, mercy, love,
Find in humanity Thy face,
And serving men, serve Thee above.

Flett Made Honorary Member

AIC President Lawrence H. Flett has been elected an Honorary member of the Chemical, Metallurgical and Mining Society of South Africa, Johannesburg, Transvaal, for the year ending June 30, 1951.

Jerome Alexander

Francis M. Turner

Vice President, Reinhold Publishing Corporation, 330 W. 42nd St., New York, N.Y.

(Presented on the occasion of the Award of Honorary Membership to Mr. Alexander)

AS AN undergraduate at the University of Toronto in 1910, I was fascinated by the lectures and demonstrations of Prof. J. C. McLennan on colloid chemistry, the ultra-microscope, the Brownian movement, the Tyndall effect, etc., and on seeking a book on the subject, was referred to Jerome Alexander's translation of Zsigmondy's "Colloids and the Ultramicroscope", just recently added to the department library. So in my own case, colloid science and Alexander are synchronous. True, I had probably heard the word in connection with dialysis in high school but no one had developed the general concept relating two such, at the time, apparently unrelated phenomena.

And even to this day one of the bewildering things about colloid science to the layman is that it involves both physics and chemistry, extends into biology and a host of other disciplines and that the word "colloid" itself, while historically quite obvious and to the initiate meaningful, is confusing to even the well-informed public.

As my associate, Mr. Gessner G. Hawley, has emphasized in his able exposition of colloid science for the layman, "Small Wonder: The Story of Colloids", the great unifying concept is that colloid science deals with *the physical and chemical behavior of extremely minute particles in relation to their surroundings.* From this stems the idea that colloid chemistry is essentially surface chemistry, leading to the colloidal aspects of catalysis, detergents and the science of the living cell.

As the biologist Dr. E. A. Evans of Chicago recently pointed out, "in the absence of the mutations due to chance, science progresses in terms of the techniques that are available to it."

Until the last half of the 19th century, information regarding biological systems was based primarily on observation and description of structure and function at a visual level, and modern biology rests on the fundamental descriptions of living matter given us by the anatomist, the physiologist and the taxonomist. There has been a steady progression through techniques proceeding from the dissection of the anatomist and

the experiments of the physiologist to analyses which even attack the intracellular structures themselves. To Alexander we are indebted—and future generations will continue to be indebted—for the elaboration of many chapters of the great story of the part played by chemistry and physics in penetrating to the submicroscopic and molecular level in biology, physiology, and experimental medicine. I need only mention the advances made possible by electrophoresis in utilizing differences in electrical charge to separate cellular materials; the ultracentrifuge which, employing forces many thousand times gravity, literally drags large molecules out of solution, or on the purely chemical side, to revert a generation, the classic work of Dr. Martin H. Fischer, F.A.I.C., of Cincinnati, on edema.

The Phenomena of Life

From his student days Alexander was keenly interested in the phenomena of "life". Quoting from his own book, "Life: Its Nature and Origin", he says:

> "My interest in minerals, plants, and animals goes back to my early boyhood. When I entered the College of the City of New York in 1891, it was my good fortune to be introduced to physics and chemistry by Professor Robert Ogden Doremus, and to botany, zoology, geology and paleontology by Professors Ivan Sickels and William Stratford. My thanks are due to these teachers and their assistants, who made science so interesting that my initial leanings toward it were quickened and extended. The fact that my college courses were very broad rather than specialized gave me a wider point of view than I might otherwise have acquired; so that when I graduated in 1896 and took up technological work instead of being able to realize an ambition to become a physician, I was able to continue my scientific studies alone.
>
> "In the spring of 1899 I submitted for my degree of Master of Science a thesis entitled 'The Importance and Trend of Recent Work on the Chemistry of Life and the Products of Life', which indicates my early interest in the matters dealt with in this volume — an interest excited largely by the then recent (1895) isolation of zymase from yeast by Buchner."

In 1891 he won the 19th Ward Scholarship prize for the highest average in all subjects in the entrance examinations for the College of the City of New York, where he elected the "scientific course" and graduated in 1896 with honors, making Phi Beta Kappa and winning the James Gordon Bennett prize, the Sons of the American Revolution prize, and a Ward medal. He served as editor of "The College Mercury" and of the '96 "Microcosm". In 1899, his Alma Mater gave him the degree of Master of Science, the title of his thesis being "The Importance and Trend of Recent Work on the Chemistry of Life and the Products of Life", in which he maintained the view that life is understandable on the basis of catalysis. Another of his early papers was entitled "The Importance of 'Impurities' ".

Development of Colloid Chemistry

Immediately after his graduation he entered and held for twenty-five years a position as chemist with a group of manufacturing companies making glues, sizings and chemical specialties. Meanwhile he continued independent scientific work and research, and became a pioneer worker with the ultramicroscope in this country. During World War I, while serving as chairman of the National Research Council's Special Committee on Glue and Other Colloids, he was affected by a "war gas" mixture (which he later learned was phosgene and mustard), and on his recovery in 1922 he took up and still carries on practice as a consulting chemist and chemical engineer. Besides serving many industries, he has been expert in many patent and legal cases

In 1909, as previously mentioned, he published an English translation of "Colloids and the Ultramicroscope" by Professor Richard Zsigmondy (Goettingen). His judgment as to the basic importance of this work was justified by the award of the Nobel prize to Zsigmondy in 1927. His own book, "Colloid Chemistry", appeared in 1919 and promptly won acceptance as a text and reference work, and a greatly enlarged fourth edition appeared in 1937. In 1922 the present speaker suggested to Mr. Alexander that he should prepare a comprehensive book on colloid chemistry, but realizing with characteristic modesty that no one person could do this, he designed a cooperative book which would include contributors from as many sources as possible.

The development of colloid chemistry in this country was aided by Alexander's enthusiasm, his lectures, and his publications in many of the fields infiltrated by this ubiquitous aspect of the behavior of matter. Among his published papers are: "Selective Adsorption and Differential Diffusion", "Colloid Chemistry and Its Industrial Applications", "The Testing and Grading of Glues and Gelatines", "The Colloidal State in Metals and Alloys", "Colloids in Astronomy and Meteorology", "Textile Fibers", "Some Intracellular Aspects of Life and Disease", "Catalysts, Catalyst-modifiers, Life and the Specificity of Vital Processes", "Catalysis as a Biological Factor", "Successive Levels of Material Structure", "Embalming and Its Medical and Legal Aspects", "Some Physicochemical Aspects of Life, Mutation and Evolution". In 1910 he read, by invitation, a paper with the late Professor J. G. M. Bullowa, before the American Medical Association (St. Louis meeting), in which he brought out the importance of colloidal protection in milk for infant feeding. He was appointed to write Monograph No. 11 of the American Chemi-

cal Society on "Glue and Gelatine" (published 1923), and he contributed chapters to the various editions of Rogers' "Industrial Chemistry", Walton's "Starch and Starch Products", and to Allen's "Commercial Organic Analysis". His papers in "Scripta Mathematica" deal with applications of mathematics to chemical and physical problems.

Other Activities

Apart from papers in scientific journals, he has been a steady contributor to the daily press on current civic, cultural, social and political matters and on several occasions the editors of the "Times" and other papers have referred with respect to these valuable and sincere communications. Nor has he been confined to prose: His verse has appeared in various publications, and two books of verse, one serious, "Essences from Life's Alembic", and one whimsically humorous, "Retorts from a Chemist's Laboratory", bear his name, as does the privately published "Tribute to Gertrude", a memorial of his beloved wife, who died in 1945.

In 1931 he was cited by the French Government for "services to science", and decorated as "Officier de l'Instruction Publique"; and in 1936 he was decorated as "Chevalier de la Legion d'Honneur". Since 1921 he has been starred in Cattell's "American Men of Science" as one of the American chemists whose work is most important. In 1943 his Alma Mater awarded him a Townsend Harris medal.

In 1917 Mr. Alexander was instrumental in founding the New York Section of "Societe de Chimie Industrielle" and has long served as Secretary thereof, and contributed usefully to the maintenance and furtherance of professional and business relations with French chemists and chemical industrialists. The organization recently revived has most suitably elected Mr. Alexander a permanent Honorary Member.

He is a Fellow of: American Association for the Advancement of Science; Honorary Member 1950, the American Institute of Chemists; and the New York Academy of Sciences.

He is a Member of: American Chemical Society (1947, Certificate for 50 years of continuous membership); Society of Chemical Industry (Chairman, Am. Sect., 1916-1918); American Institute of Chemical Engineers (charter member); American Institute of Mining and Metallurgical Engineers; Honorary Member, 1950, Societe de Chimie Industrielle (Sec. 6, founder N.Y. Section 1917); American Association of Textile Chemists and Colorists; Honorary Member, 1946, Association of Consulting Chemists and Chemical Engineers; Society for Medical Jurisprudence; American Genetic Association; N.Y. Section, Society of American Bacteriologists; N.Y. Microscopi-

cal Society (Life member); the Chemists' Club, N.Y. (Life member); Authors' Club, London; Phi Beta Kappa (President, Gamma Chapter: past-President, N.Y. Alumni); Phi Beta Kappa Associates; Pi Lambda Phi (Founder member: past Supreme Rex), "Big Pi" award—1950; Pi Gamma Mu, Honorary Member (Social Science Honor Society); National Institute of Social Sciences; Tau Beta Pi (Engineering Honor Society), Honorary Member; and Historian, Camp No. 985, Sons of Confederate Veterans.

It is our privilege to honor a great and versatile chemist; a prolific but always capable author; an exceptionally loyal and useful citizen of his city, state, and nation; a cultured gentleman, and to all of us, and hundreds of others, a good friend.

In the December issue of "The Hormone", the chemical paper from Holy Cross College, Worcester, Mass., my good friend Father Bernard Fiekers says:

> "The chemist is a scientist who deals professionally with the material. His eyes at times lose sight of the stars out of preoccupation with the tracks on the ground. The reverent scientist recognizes the Wayfarer of the Universe who left these footprints on His earth. He sees His image in his own and that of his fellow men. He sees His living image in His sons and daughters who do His Will. He finds solace in this season which commemorates the great synthesis between material and the spirit. Hic est Digitus Dei."

These lines might well have been written with Jerome Alexander in mind.

Presentation of Honorary Membership

President Lawrence H. Flett, A.I.C.

(*Citation to Jerome Alexander*)

WHEN one mentions the name, "Jerome Alexander", it immediately brings to the chemist's mind his series of books on colloid chemistry. They are not his only books, but they are by far the best known. Most of us knew Alexander's *Colloid Chemistry* long before we knew Jerome Alexander.

Seven volumes of his *Colloid Chemistry* have already been issued, with a total of over 6,500 pages. The year 1951 is the silver anniversary of the year in which Volume I was issued. In 1926, when the series was started, colloid chemistry was indeed an infant science. Volume VIII, I understand will be issued in 1952, which according to *Who's Who in America* will be the seventy-fifth year of Jerome Alexander's life. It is a remarkable fact that in all of those years, not one of these books has become outmoded, which is in itself

a glowing tribute to the careful planning that went into them.

When Jerome Alexander planned his books on colloid chemistry, he wished to make them so comprehensive that he soon realized that no one individual had the requisite knowledge to write them. This led him to gather material and help from a most remarkable array of authors located all over the world. His contributors included such names as: Einstein, Bragg, von Weimarn, Harkins, Willstaetter, McBain, Emmett, Millikan, Langmuir, Freundlich, Hatschek, Zsigmondy, Germer, Eyring and Bridgman.

There was among his authors at least one who did not carry a brilliant or famous name like those just read; but possibly Jerome Alexander, like a great artist, uses dull and dark pigments to bring out more effectively the brilliance of the whole.

You may be interested in my own experience as one of the authors who has worked with him. In the first place, he had a very definite idea as to exactly what he wished and needed to fit into the pattern of his new volume, and he provided an exact definition of the field which he wished covered. Interestingly, he chose the cocktail time to request the chapter and he followed it next day with a letter in case some details should be forgotten. His review of the manuscript was prompt, his criticisms fair and constructive. I am sure I speak for all of those who have worked with him, when I express sincere admiration for him both as a scientist and a gentleman.

The advances in colloid chemistry made possible by his books are beyond appraisal. No other individual has had such a profound effect on this science, which has grown up to full stature in his lifetime. Many of us are very much indebted to him for the help we have received from his publications. I think it is the ambition of every scientist to play as important a part in his field as Jerome Alexander has played in colloid chemistry.

Jerome Alexander's contributions to the profession comprise far more than his seven volumes of *Colloid Chemistry* and his other writings. Among other things, he has struggled incessently for simplicity of expression. Chemists have difficult ways of saying things. At times it is hard to believe that some chemists do not go out of their way to express things in a language that goes a little beyond the understanding of their listeners.

I sat at a meeting beside Jerome Alexander one afternoon when one of our profession was discussing a very simple matter in the most complex terms and at very great length. As he finally sat down, Jerome Alexander lowered his head and remarked, "What this science suffers from is not laryngitis but languagitis!"

The INSTITUTE is honoring this

man for the contributions to science and for the advice, the guidance, the encouragement and the help which he has given to others in the profession. The INSTITUTE recognizes the important part he has played as a citizen, a responsibility which we believe belongs to everyone in the chemical profession. It is the purpose of the INSTITUTE to recognize and honor these achievements and these outstanding examples of professional consciousness.

Jerome Alexander, Fellow of THE AMERICAN INSTITUTE OF CHEMISTS, it is a privilege to be here at the invitation of the New York Chapter to award to you an Honorary Membership in THE AMERICAN INSTITUTE OF CHEMISTS in recognition of your life-long contributions to the profession. Tonight it is an unusual pleasure, because for the first time, we are using a new type of membership certificate which contains a brief citation giving the reason for the award.

Yours reads as follows:

Jerome Alexander

A distinguished American scientist of world-wide renown, who has had a profound influence on the science of colloid chemistry.

Invocation

Rev. John Haynes Holmes

(Presented at the Award of Honorary Membership to Jerome Alexander.)

WE THANK Thee, our Father, for the things which have brought us together in this place—for minds that seek to know Thy truth, for hearts that show the way to love of humankind, for souls that reveal the presence of Thy spirit in the lives of men, and for that impulse of brotherhood that makes us one.

Especially do we thank Thee, O God, for our comrade whom we honor this night. At once our friend and Thy servant, we bless him for his patience in research, his steadfastness in the ordeals of knowledge, his courage in great tribulation, his unfailing spirit of kindliness and good will. Bless him as he faces undaunted the illimitable bounds of truth, in dedication to Thee and to Thy kingdom on earth.

So do we bow before Thee, O God, and pray in Thy holy name. Amen.

Societe de Chimie Industrielle

The American Section of the Societe de Chimie Industrielle has now been reactivated, after having been dormant since the outbreak of World War II and the invasion of France. Unsettled conditions in the immediate postwar period prevented the resumption of activities until the present time. The reconstituted American Section now has the following officers: President, Dr. Worth Wade, American Viscose Corporation; Vice presidents, Dr. R. S. Aries, F.A.I.C., consulting chemical engineer, and Jean R. L. Martin, Coty, Inc.; Honorary Secretary, Jerome Alexander, Hon. AIC, one of the original founders of the American Section in 1917; and Secretary - Treasurer, Pierre L. Bouillette, 330 West 42nd Street, New York 18, N.Y.

The reactivation has been effected during an opportune time because of the projected international chemical festivities in September, 1951, in New York and Washington, which a large French and French-speaking delegation is expected to attend.

Cenco Purchases Refinery Supply

W. A. Schleuter, president of Refinery Supply Company of Tulsa, Okla., and E. P. Holder, chairman of Cenco Corporation and Central Scientific Company, announce the purchase of Refinery Supply by the Cenco Corporation. No real estate was involved. The Refinery Supply Company becomes a wholly owned subsidiary of the Cenco Corporation and will continue to operate as such. Mr. Schlueter will continue as president of Refinery Supply. He has joined Central Scientific Company as a director and vice president.

New Oil Recovery Process

Oil Recovery Corporation, 405 Lexington Avenue, New York 17, N.Y., announces a new process for recovering oil from supposedly exhausted petroleum fields. The Orco Process, which utilizes carbon dioxide to treat the oil sands, was patented by James W. Martin, who utilized previously unknown characteristics of the the gas to avoid the failures of others who have attempted to employ carbon dioxide for this purpose. Montclair Research Corporation and Ellis-Foster Company of Montclair, New Jersey, have done much of the laboratory research and development work. Core tests were made in the core analyses laboratories of Earlougher Engineering, Tulsa, Okla. Paul D. Torrey of Houston, Texas, has acted as special consultant.

Eisenman Elected

Herschel I. Eisenman, F.A.I.C., owner and president of Eisenman-Kofsky, Inc., fur dressers and dyers, has been elected to the Council of the Technical Association of the Fur Industry. He was one of the founders of the Association and has served as its president.

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M. L. Crossley, *At-Large*
Gustav Egloff, *Chicago Chapter*
Gustav Egloff, *Past President*
G. J. Esselen, *At-Large*
M. J. Hiler, *Ohio Chapter*
L. B. Hitchcock, *At-Large*
H. O. Kauffmann, *Niagara Chapter*
R. H. Kienle, *At-Large*
Harold A. Levey, *Louisiana Chapter*
K. M. Herstein, *New York Chapter*
C. P. Neidig, *At-Large*
L. F. Pierce, *Los Angeles Chapter*
Donald Price, *At-Large*
Louis N. Markwood
Washington Chapter
H. Robinette, *Pennsylvania Chapter*
Maurice Siegel, *Baltimore Chapter*
Foster D. Snell, *Past President*
Raymond Stevens
New England Chapter
Florence E. Wall, *At-Large*
James R. Withrow, *At-Large*

January Meeting

The 273rd meeting of the National Council was held January 10, 1951, at 6:00 p.m., at The Chemists' Club, 52 E. 41st St., New York, N.Y. President Lawrence H. Flett presided.

The following officers and councilors were present: Messrs: M. L. Crossley, G. Egloff, G. J. Esselen, L. H. Flett, K. M. Herstein, F. A. Hessel, H. O. Kauffmann, R. H. Kienle, H. Robinette, Jr., L. Van Doren, Miss F. E. Wall, and J. R. Withrow. C. A. Amick, L. F. Hoyt, M. J. Kelley, and V. F. Kimball were present.

The minutes of the previous meeting were accepted.

It was decided to cancel the scheduled meeting of the National Council for February, and to hold the next meeting on March 14th.

President Flett announced that the award of Honorary Membership to Jerome Alexander would be presented

by the New York Chapter at a meeting on January 25th. The award of Honorary Membership to Dr. Alexander Silverman will be presented, under the auspices of the Pennsylvania Chapter, at a meeting of The Chemists' Club of Pittsburgh, Pa., on February 6th.

The Treasurer's report was accepted.

Dr. Hessel was requested to prepare resolutions on the death of A. Cressy Morrison, Hon. AIC. Mr. Herstein and Dr. Van Doren were asked to prepare resolutions on the death of Harvey A. Seil, F.A.I.C.

The Secretary reported that 2434 members are on the active rolls of the INSTITUTE. He announced, with deep regret, the death of the following members:

Thomas Dixon Dudderar
M.A.I.C., on Oct. 7, 1950

Charles J. Holland,
F.A.I.C., on Nov. 24, 1950

Charles A. Mann,
F.A.I.C., on June 16, 1950

Thomas W. Mason,
Life member, on Mar. 19, 1950

A. Cressy Morrison,
Hon. A.I.C., on Jan. 9, 1951

Harvey A. Seil,
F.A.I.C., on Jan. 5, 1951

James N. Taylor,
F.A.I.C., on Nov. 19, 1950

Philip A. Wright,
F.A.I.C., on Sept. 14, 1950

President Flett was requested to prepare the message of greeting from the AIC to the Diamond Jubilee Meeting of The American Chemical Society.

Dr. Kauffmann reported on plans for the Annual Meeting to be held under the sponsorship of the Niagara Chapter, on May 9, 10, and 11, 1951, at the General Brock Hotel, Niagara Falls, Ontario.

Mr. Robinette reported on the activities of the Pennsylvania Chapter.

Mr. Amick reported that the New Jersey Chapter has appointed a membership committee of 24 members, and four progress reports have been issued. Twenty new members have been attained. The goal for the year is 100 new members. The Chapter is appointing a committee to call the attention of qualified advertisers to THE CHEMIST.

Mr. Herstein, who is now filling the unexpired term of Dr. Martin Meyer as New York Chapter representative to the Council, reported on the recent Student Meeting held by the Chapter.

Dr. Egloff reported on the activities of the Chicago Chapter.

Mr. Hoyt presented a tentative program for the Annual Meeting and asked for suggestions from the Council.

The Council authorized the preparation of a special form of certificate of Honorary membership.

Dr. Kelley discussed the current status of the proposed Employment Project. (See page 74).

Guest editorials for THE CHEMIST were promised by Dr. Kauffmann, Mr. Robinette, Miss Wall, Mr. Hoyt, Mr. Amick, Dr. Kelley, Dr. Egloff, Dr. Crossley and Dr. Withrow.

President Flett announced that Chapter chairmen would be asked to confer with their membership, or appoint a committee, to select the best guest editorial in THE CHEMIST for the preceding year, the picture of the author to be printed on the front cover of THE CHEMIST.

Miss Wall reported that she had presented a complete file of THE CHEMIST from 1928 to 1948 to the Crerar Library in Chicago.

President Flett announced that AIC breakfasts would be arranged at the American Chemical Society meetings to be held in Boston and Cleveland.

The following new members were elected:

LIFE

Thomasson, Raymond F.
Chemist and Health Surveyer, Monsanto Chemical Co., Mound Lab., Mound Street, Miamisburg, Ohio.

Williams, R. P. Dean
Managing Director, L. H. Lincoln & Son, Coudersport, Pennsylvania.

1951 Annual Meeting

The American Institute of Chemists

May 9, 10, 11

General Brock Hotel,

Niagara Falls, Ontario

Hosts: Niagara Chapter, A.I.C.

(Details in later issues of The Chemist)

FELLOWS

Augenstein, John G.
Chief Chemist, U.S. Rubber Reclaiming Co., Box 365, Buffalo 5, New York.

Buess, Charles Merlyn
Research Associate, Chemistry Dept., Northwestern University, Evanston, Illinois.

Colburn, William
President, Colburn Labs., Inc. 732 S. Federal St., Chicago 5, Ill.

Cope, Arthur Clay
Head, Dept. of Chemistry, Mass. Institute of Technology, Cambridge 39, Mass.

Davis, T. Allan
Industrial Specialist, Chem. Division, Office of Industry & Commerce, U.S. Dept. of Commerce, Washington 25, D.C.

Dews, Charles T.
Assistant Chief Chemist, Trumbull Asphalt Co. of Delaware, 59 & Archer Street, Summit, Illinois.

Dippel, Harry W.
Vice President & Lab. Director, Stillwell & Gladding Inc., 130 Cedar Street, New York, N.Y.

DuBois, Adrien S.
Supervisor of Production, West Disinfecting Co., 42-16 West Street, Long Island 1, New York.

Fraser, Oliver B. J.
Assistant Manager, Development and Research Division, International Nickel Co., Inc., 67 Wall Street, New York 5, N.Y.

Herbsman, A. Martin
Research Chemist, Research Products Co., Ltd., 7605 Santa Fe Ave., Huntington Park, Calif.

Kemp, Cecil R.
Director Professional Relations, Flint Eaton & Co., 300 East Main, Decatur, Illinois.

Magnusson, Frederick Swain
Commodity Specialist — Chemical Economist, Office of International Trade, U.S. Gov't., Dept. of Commerce, Washington, D.C.

Oliver, Ralph R.
Research & Chief Chemist, Lockport Cotton Batting Co., Lockport, N.Y.

Oroshnik, William
Director, Div. of Organic Chemistry, Ortho Research Foundation, Raritan, New Jersey.

Pollack, Robert A.
Vice President & Technical Director, Brown Oil & Chemical Corp., Staten Island 2, New York

Roberts, Joseph K.
General Manager of Research & Development, Standard Oil Co. (Ind.), 910 S. Michigan Avenue, Chicago 80, Illinois.

Ryznar, John William
Technical Director, Research Department, National Aluminate Corp., 6216 West 66th Place, Chicago 38, Illinois.

Samaras, Nicholas N. T.
Director of Central Research Department, Monsanto Chemical Co., Dayton, Ohio.

Spalding, Samuel Clyde, Jr.
Research Chemist, Research Lab., Devoe & Raynolds Co., Inc., 15th & Lytle, Louisville, Ky.

Stacy, Eliot R.
Manager, Specification & Standards Section, Pigments Tech. Service, Calco Chemical Division, American Cyanamid Co., Bound Brook, N.J.

Suter, C. M.
Associate Director, Sterling-Winthrop Research Institute, Rensselaer, N.Y.

Wolf, John P.
Chief Chemist, Baker & Adamson Works, General Chemicals Division, Allied Chemical & Dye Corp., Marcus Hook, Penna.

Wolnak, Bernard
Research Chemist, Miner Labs., 9 S. Clinton St., Chicago 6, Ill.

MEMBERS

Atlas, Vladimer
Research Chemist, Chemical Specialties, Foster D. Snell, Inc. 29 West 15th Street, New York, New York

Berdick, Murray
Research Project Leader, Evans Research & Development Corp., 250 East 43rd Street, New York, New York

Buell, George C.
Dept. Aviation Medicine, U.S. A.F., School Aviation Medicine, Randolph A.F.B., Texas

Cohen, Jerome
Chemist, Biochemistry Dept., Armour & Co., 1425 West 42nd St., Chicago 9, Illinois.

Coneybear, Savery F.
Vice President & Development Manager, Evans Research & Development Corp., 250 E. 43rd Street, New York 17, N.Y.

Corso, Joseph Victor
Chemist, Chemical Dept., Hogan Labs., 155 Perry Street, New York, N.Y.

Mueller, Helmut S.
Chemist, Keuffel & Esser Co., 300 Adams St., Hoboken, New Jersey

Williams, Roger Jr.,
President, Roger Williams Inc., 148 E. 38th Street New York, New York

ASSOCIATES

Harris, Lawrence
Chemist, Laboratory, Stein-Davies Corp., 12-10 Jackson Avenue, Long Island City New York.

Magnuson, Donald Vincent
Supervisor, Research & Development Labs., Precision Scientific Co., 3737 West Cortland, Chicago, Illinois.

Orlando, Vincent E.
Production Chemist, National Aniline Division, Allied Chemical and Dye Corp., 1051 South Park Avenue, Buffalo, New York

Rosenblum, Franklyn M.
Chemist, Stein-Davies Co., 12-10 Jackson Ave, L.I.C., New York.

REINSTATED TO FELLOW MEMBERSHIP

Rattiner, A. Alan
President, Helan, Inc., 160 Cortlandt Street, Belleville, N.J.

Weinberger, Walter P.
Director of Chemistry, Paglo Labs., 78 Fifth Avenue, New York 11, N.Y.

REINSTATED TO MEMBER MEMBERSHIP

Raithel, Edward E.
Superintendent & Technical Director, Pennsylvania Ohio Ind. Sales Co., Neville Island, Pittsburg 25, Penn.

RAISED FROM MEMBER TO FELLOW

Boyle, Frederick Talbot
Plant Superintendent, Oakite Products Inc., 2 Ford Avenue, Milltown, New Jersey

AIC Activities

C. P. Neidig, F.A.I.C.

American Board of Clinical Chemistry, Inc.

A certifying board, the American Board of Clinical Chemistry, Inc., has been established by representatives from THE AMERICAN INSTITUTE OF CHEMISTS, INC., the American Chemical Society, Inc., and the American Society of Biological Chemists, Inc.

It is the purpose of this Board to encourage the study, improve the practice, elevate and establish standards and advance the science of that specialized branch of chemistry entitled "clinical chemistry"; to grant and issue certificates or other recognition of special knowledge in clinical chemistry to voluntary applicants who, in accordance with the by-laws, rules and regulations of the Board, have established their fitness and competence; to prepare and furnish in the public interest a registry of individuals with specialized knowledge in clinical chemistry who have from time to time been granted certificates by the Board. The Board is analagous in purpose, function and organization to the various medical specialty boards which have served for many years to establish standards and qualifications for persons wishing to practice in a specialized field in medicine. Requirements for admission to examination and certification are briefly as follows:

1. Presentation of evidence of satisfactory moral and ethical standing.
2. Educational background equivalent to that of a Doctor of Science. (Ph.D., M.D., M.Sc., etc. may offered).
3. Accredited courses in analytical, organic, physical, and biological chemistry.
4. Either three years' full-time experience in an acceptable clinical laboratory, or five years in a position of assistant professor or above in biological chemistry, clinical chemistry or related fields.
5. Pass a written and/or oral examination on broad principles of clinical chemistry.
6. Candidates without the full formal educational requirements set forth above but who have practiced clinical chemistry for ten years in a responsible position in an acceptable clinical laboratory, may be certified without examination at the discretion of the Board.
7. Candidates who file applications prior to July 1, 1952, whose qualifications based on training and experience satisfy the Board, may be certified without examination.

Prescribed forms for application and further information may be obtained from the office of the Secretary-treasurer, Dr. Jos. W. E. Harrisson, F.A.I.C., 1921 Walnut Street, Philadelphia 3, Pa. A fee of $1.00 must accompany the application request, to cover clerical and

mailing costs. All requests should give the name of the applicant in the manner it is to be recorded, as application forms will be issued.

International Conclave of Chemistry

The International Conclave of Chemistry will open in New York, N.Y., September third, with the Diamond Jubilee Meeting of the American Chemical Society. On September 8th and 9th, the International Union of Chemistry will meet, followed by the meeting of the International Congress of Chemistry from September 10th to 13th. On September 14th and 15th, the delegates of the International Union will meet in Washington, D.C., when the fiftieth anniversary celebration of the U. S. National Bureau of Standards will be held. Preparations and plans for the meetings are going ahead under Dr. W. Albert Noyes, Jr., vice president of the International Union; Dr. Harry L. Fisher, Hon. AIC, of the National Research Council, and Dr. Arthur B. Lamb, chairman of the Committee on Organization. Dr. Gustav Egloff, Hon. AIC, is in charge of trips; Dr. Walter J. Murphy, Hon. AIC, publicity; Dr. Foster D. Snell, Hon AIC, entertainment, and Dr. Edward R. Weidlein, Hon. AIC, finances. Section chairmen of the International Congress include; Dr. Hans T. Clarke, F.A.I.C., Biological Chemistry; Dr. R. P. Dinsmore, F.A.I.C., Elastomers and Plastomers; Dr. F. D. Snell, F.A.I.C., Fats and Fatty Oils, Soaps, and other Detergents; Dr. H. Mark, F.A.I.C., Macromolecules; Dr. Glenn T. Seaborg, F.A.I.C., Nuclear Chemistry; and Dr. Arthur C. Cope, F.A.I.C., Organic Chemistry.

Thomas Heads Manpower Committee

Dr. Charles A. Thomas, Hon. AIC, executive vice president, Monsanto Chemical Company, has accepted chairmanship of the Scientific Manpower Advisory Committee of the National Security Resources Board. The duties of the committee are to advise the government on how scientific and technological personnel can be used most effectively for defense, and to examine the manpower proposals submitted by federal agencies, industry, and scientific and educational organizations.

Dr. Gustav Egloff, Hon. AIC, participated in a panel discussion held by the Western Society of Engineers on January 8th. The subject was, "Employment and Advancement Opportunities for Engineers." On January 9th, before boarding the Century for New York, Dr. Egloff was interviewed by Bob Elston. This recording was broadcast over WOR, New York; WPEN, Philadelphia; KNX, Los Angeles, and WENR, Chicago. The subject: "Are We Running Out of Oil?"

For Your Library

Biophysical Research Methods

Edited by Fred M. Uber, Interscience Publishers, Inc. 1950. 667 *pp.* 6" x 9". $9.50.

This collective volume is intended for researchers in the biological, medical, and agricultural fields who frequently depend on physical methods. There are 17 chapters, prepared by 17 different specialists. The first, entitled, "Avoid Fruitless Experiments," written by Dr. Uber, is a critical discussion concerning the many important factors that should be considered before, during, and after the completion of a research problem. Six chapters deal with methods using osmotic pressure, viscosity, calorimetry, centrifugation, and bioelectric measurements. Other chapters discuss quick-freezing, electrophoresis, ultrasonic vibration, microscopy, action spectra and absorption spectra, x-rays and x-irradiation, electrons, neutrons, and alpha particles, stable isotopes as tracers, and radioactive tracers.

In this book the limitation of the various methods are well explained. References to commercial sources of materials and equipment are listed. There is a bibliography after each chapter. This volume contains a large amount of important information. It should prove useful as an aid in teaching. It will no doubt offer enjoyable reading also to those chemists who are not directly interested in applied physics.

—Dr. Henry Tauber, F.A.I.C.

Organic Coatings in Theory and Practice

By A. V. Blom. Elsevier's Polymer Series. Elsevier Publishing Co., Inc. 1949. 298 *pp.* $6.00.

The organic coating industry, including not only the manufacture of paints, lacquers and varnishes, but the production of impregnating and adhesive compositions as well, has undergone tremendous changes during the last two decades. It is the aim of this work to review the situation up to the present time and to indicate and establish future fields for technological development and investigation.

Chapter I deals with fundamental considerations, such as colloidal and macromolecular concepts, plasticization and film formation. Chapter II discusses the film-forming materials from natural sources, e.g., resins, drying oils, tar cellulose derivatives, rubber, water soluble materials, etc., while Chapter III describes synthetic materials such as cumarone resins, phenolic resins, polyesters, vinyl compounds, urea and melamine resin and silicones. Chapter IV and V are devoted to physical and chemical film formation, respectively.

Finally, there is a chapter on the pigmentation of paints and enamels discussing the relationship between pigment and vehicle and a chapter devoted to testing and evaluation of coating film properties.

The book is attractively bound, well-illustrated and well-indexed. Its scope should make it valuable not only to those engaged in the paint, varnish and adhesives industries, but also, due to the close connection with the plastics industry, to the plastics chemist.

—William H. Van Delden, F.A.I.C.

The Technology and Chemistry of Alkaloids

By Frank E. Hamerslag, F.A.I.C. D. Van Nostrand Co., Inc. 319 *pp.* 5¾" x 8¼". $6.50.

This book represents a genuine contribution to the literature of chemical technology The data on the production, chemical properties, physiology and analytical behavior of alkaloids have been scattered throughout the chemical literature with no comprehensive gathering into one convenient reference. Mr. Hamerslag has supplied this need very effectively.

There is a first chapter containing a general discussion of the extraction and purification of alkaloids; a description of the equipment and machinery required for their production, and a discussion of the technique of plant operation. Having had many years of experience in this sphere, the author is particularly qualified to give such a discussion. The following eighteen chapters are each divided into approximately five divisions, as follows: Chemistry, Natural Sources, Manufacturing Methods, Pharmacological Properties and Therapeutic Uses, and Analytical Methods.

In some chapters the discussion is broadened by the introduction of material on synthetic methods, or other relevant matters, such as special methods of purification. Each of the eighteen chapters is concerned with the alkaloids of one particular family, ranging alphabetically from Aconite to Yohimbine. The writing is lucid and the arrangement of the material is excellent.

The author is to be congratulated on his work, and it is hoped that the book will have wide circulation in all places where a knowledge of the chemistry and technology of alkaloids would be useful.

—Karl M. Herstein, F.A.I.C.

Progress in Coal Science

Edited by D. H. Bangham. Interscience Publishers, Inc. (Butterworths' Scientific Publications, London) 1950. *XI plus* 456 *pp.* $7.00.

Chemists who read this book will soon find out that their interest in coal should not be limited to the pure chemicals which can be obtained from it. Coal science, as presented here in twenty-six short monographs, embraces such methods as chromatography, mass spectrometry and X-ray analysis; it is concerned with production and behavior of fine powders as well as with petrography, with the chemistry of combustion and the complex influences of ash constituents upon it, with oxidation and hydrogenation, with decomposition into gas and synthesis from gas. Problems of humus and coal formation enter into it. Rare elements in coal ashes are intriguing and invite either theoretical speculation or practical utilization. The twenty-nine authors discuss the specific properties of coal on a broad basis. They apply fundamental information to their particular subjects and thus stimulate further application to problems which otherwise would not come to mind as related. The fundamental approach can be compared to an input of energy which the reader may then be able to transform for his purposes.

This is true although the book is not completely up to date. If this were the only standard applied to the book, it would be found deficient in parts. Some of the chapters were written back in 1943, one of them even relies mainly on a monograph dated 1936! In fact, it is mostly a selection "from a series of articles which received private circulation in the *Monthly Bulletin* of the British Coal Utilization Research Association during the years 1943 to 47." (p. VIII).

Lack of most recently developed information is, however, apparent only in respect to hydrogenation and synthesis. This information is readily available in current literature. The great value of this book consists in bringing together many basic results on a highly complex subject.

There are ample references to the literature. Haber's theory of flame and combustion is strangely missing, although it was published in British journals. The Index (of subjects only) is nicely arranged, but not very extensive.

—Dr. Eduard Farber, F.A.I.C.

Handbook of Antibiotics

By A. L. Baron, Reinhold Publishing Corp. 1950. 303 *pp.* 6" *x* 9". $6.50

This is a well-conceived and clearly presented reference book, indispensable to anyone with a technical or commercial interest in the subject of antibiotics. Here in concise form are the chemistry, bacteriology and pharmacology of all antibiotics known up to the middle of 1949 with a good bibliography on each individual compound. In addition there are valuable chapters on the certification of and the selection and registration of trade marks for antibiotics, by Henry Welch and Walter J. Derenberg. It is the hope of this reviewer that the author will continue to accumulate information on this subject as it is published and that in a few years either a new edition or a supplement will be issued.

—Dr. F. A. Hessel, F.A.I.C.

Biological Studies with Polonium, Radium and Plutonium

Robert M. Fink, editor. McGraw-Hill Book Co. 411 *pp.* 6¼" *x* 9½". $3.75

Studies on the course of polonium, radium, and plutonium in the animal body are given with experimental details. The lethal dosages to kill rats for polonium, plutonium, radium, respectively were in microcuries per kg. in 20 days (43, 83, 2100); 60 days (23, 46, 735); 100 days (17, 37, 320).

The tissue changes were of types pro-

duced in rats by single-dose X-radiation, 550 Roentgen. Calcification of arteries was marked. Male generative organs damaged, female ovaries slightly affected, if at all.

The rate of elimination from the body is approximately logarithmic. Polonium excretions 26% in ten days; 73% in 100 days; 96% in 300 days. Radium and plutonium elimination are similar, but related to the depth of penetration in the bone.

—Dr. John A. Steffens, F.A.I.C.

Chemical Books Abroad

Rudolph Seiden, F.A.I.C.

Carl Hanser Verlag, Muenchen: *Anorganische Technologie, I,* by Karl Winnacker and Ernst Weingaertner, 1950, 609 pp. with 315 ill. and 91 tables, DM 37. An ambitious work, written with the cooperation of many eminent industrial experts: an up-to-date review of the entire chemical industry is planned under the title, "Chemische Technologie", in 5 volumes, the last of which is supposed to come off the presses early in 1952. The first volume contains half of the inorganic material compiled by the editors. Its chapters discuss technical production methods in general; water; liquefaction of air and oxygen; salt and the alkalies; rare gases; potassium industry; boron compounds; chlorine and its compounds; fluorine and its compounds; and peroxide compounds. Many literature sources and patents are cited. Improvements made in industrial procedures and equipment during the last few years are emphasized, but historical facts and economically interesting data are also given thorough consideration • *Kunststoff - technisches Woerterbuch,* by A. M. Wittfoht, 1948, 316 pp. with 40 ill., DM 12. A valuable special dictionary for those who read foreign literature dealing with the growing number of plastics and other artificial materials industrially used. The pocketbook contains English-German and German-English vocabularies with definitions of the newer technical terms and an appendix with practical conversion tables and listings of various abbreviations found in literature.

Dr. W. Junk, The Hague: *The Scientist's Ready Reckoner,* by W. Roman, 142 pp., G 6.50 Here is the most useful compilation of figures, conversion factors, and logarithms for the laboratory chemist and research worker that I have ever seen; in many respects it is more complete than the famous "Kuester"! It includes 38 pages of gravimetric factors and 12 pages of titrimetric equivalents, in addition to tables of atomic weights, weights of radicals and molecules, specific gravities of liquids, temperature conversion tables, and various logarithms.

Editio Cantor, Aulendorf/Wuertt.: *Dosis und Wirkung,* by Hermann Druckrey and Karl Kuepfmueller, 1949, 135 pp. (numbered 511-646) with 54 ill., DM 10.20. Published as a scientific supplement to the journal, "Die Pharmazie", this investigation for the first time tries to apply higher mathematics and physical chemistry to bring to light the interrelationship between doses and actions of pharmaceutical agents. Although the 323 formulas used to support the authors' ideas seem to be of little practical value, some of them may become helpful for the support of newer pharmacological theories.

Verlag Birkhaeuser, Basel: *Hormone,* by W. von Buddenbrock, 1950, 492 pp. with 115 ill., SFr. 47.50. This is volume 4 of *Vergleichende Physiologie,* the first of a 6-volume work on comparative physiology. The hormones are described by a zoologist from a physiological point of view and, therefore, should be of special interest to the biologist. He and other research workers may find in this book new ideas for the solution of problems of general endocrinology and those of importance to human beings by applying findings made with the experimental animals described (mostly vertebrates and in some cases invertebrates).

S. Karger, Basel (Interscience Publishers, N. Y.): *Synthetische Methoden der organischen Chemie.* Vol. 4, by W. Teilheimer, 1950, 360 pp., Sfr. 37. The fourth volume of this series, reviewed in more detail in this column in the Oct. 1950 issue of THE CHEMIST, gives abstracts of organic-synthetic methods published here and abroad in 1947 and 1948 (with a few supplementary references

reaching into 1949). An English index key is again provided to make the book more usable for American chemists; 11 American firms subsidized the editorial preparation of the work, which will be continued, and R. S. Aries & Associates of New York arranged with the editor for a consulting service offering complete literature sources and detailed information about production methods of the organic chemicals described in this series.

Opportunities

Doris Eager, M.A.I.C.

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Chemist: Electroplating, control & some experimental work. Salary to $4,500. Box 21, THE CHEMIST.

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Chemist: Ph.D., inorganic, colloidal. Section head. Take charge of laboratory. Southern miner & refiner china clay. Box 25, THE CHEMIST.

Chemist: B.S., formulation, handling complaints, oil paints, printing inks. South. Box 27, THE CHEMIST.

Metallurgist: Steel. Research and production, specifications and substitutions. To $9,000. Box 29, THE CHEMIST.

Sales Engineer: Metropolitan area, know barrel finishing of small metal parts. Salary to $7,000. Box 211, THE CHEMIST.

Chemist Available

Materials Engineer: Ph.D., 28 yrs. broad chemical background. Seeks permanent connection. Familiar with Government systems of control, defense demands and methods for meeting shortages. Supervisory, research, product development and W.P.B. experience. Ability to meet and work with people. Numerous publications. Patents. Eastern location preferred. F.A.I.C. Box 20, THE CHEMIST.

Proposed A.I.C. Employment Project

Dr. Maurice J. Kelley, chairman, New York Chapter, A.I.C., discussed the current status of the Proposed Employment Project, at the recent National Council Meeting. He stated that a Board of Governors for the project is now being selected and that pledges of funds to the project now total $5,000.

Training Programs

The Association of University Evening Colleges, which includes 76 colleges throughout the United States, announces a program to help industry in training present personnel to assume higher responsibilities. Any industry can contact the association to work out required courses, which may be given at a participating college, or if need be, at the industrial plant itself.

Student Placement at Illinois

Illinois Institute of Technology announces that 75 per cent of its graduating class has been placed in industry; the other 25 per cent has been called for military service. Salary levels reported by the Illinois Institute are up, the average starting wage being from $290 to $315.

Navy Demand for Civilian Scientists

Many opportunities for civilian scientists in the Navy are announced in the January, 1951, issue of the *Scientific Personnel Employment Bulletin*, published by the Personnel Division, Office of Naval Research, Dept. of the Navy, Washington 25, D.C.

du Pont Awards

E. I. du Pont de Nemours & Co., Inc., will award fellowships to forty-seven universities and grants-in-aid to ten universities, totaling $390,400, for the academic year 1951-52.

The fellowships include post-graduate and post-doctoral grants. Forty-five are in chemistry, fifteen in chemical engineering, five in mechanical engineering, three in physics, two in metallurgy, one in biochemistry, and one in biology. The grants-in-aid are to be used in fundamental chemical research.

Plan now to attend the AIC Annual Meeting May 9, 10, 11, 1951.

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February Note

Dr. Otto Eisenschiml, F.A.I.C., noted Chicago chemist and Lincoln scholar, will play the part of John Wilkes Booth in the re-enactment of Lincoln's assassination, to be presented by Lincoln College, Lincoln, Ill., on February 13th.

The Chemists' Story

William M. Rand, president of Monsanto Chemical Company, St. Louis, received the Chemical Industry Medal of the American Section of the Society of Chemical Industry at its meeting in New York on November third. His acceptance address was entitled, "Our Responsibility for Public Understanding."

Speaking of technically trained men and the draft, Mr. Rand stated, "America's scientific progress depends upon trained technical men . . . In the draft boards there is no difference between a boy who has just received an M.S. degree in chemistry or chemical engineering and a boy who has not advanced beyond high school. At present, the boy who is getting the M.S. degree is deferred while he is getting it and drafted before he has a chance to use it. I am not critical of the administration of the Selective Service Law or of the draft boards. I am critical of a law which drafts a young man for a job of private in the Army and ignores the value of his training in scientific fields . . . Furthermore, if assigned to scientific work, his services should be recognized by some insignia to protect him from the embarrassment of being in mufti while his contemporaries are in uniform.

"Something is being done about it by some of our scientific societies. When the time comes to put their plans into law, the public should make itself heard."

Chemists should endeavor to inform the public about the story of chemical industry, Mr. Rand stressed: "Since 1946, the chemical industry has expanded at the rate of one-billion dollars a year in invested capital, faster than any other industry . . . Yet, we the trustees of this industry, have done very little toward telling our story to the public. In comparison with the oil industry, the steel industry or the railroads, our efforts are infinitesimal. Would it not be of advantage to all of the organizations which base their welfare on chemistry to join in a united effort to tell this story? . . . to cooperate each with the other in a united effort in whatever way possible to bring before the people of this country the accomplishments and the needs of our industry.

"By nature we in chemistry probably never can have the close public touch that the food industry, the automobile makers or appliance makers enjoy; nevertheless, our story can be clearly and forthrightly told to the public. Ours is one of the grandest stories ever told. It tells of leadership in scientific accomplishment. It tells of the fulfillment of man's needs.

"Alchemy has evolved into chemistry and chemistry has given us far greater riches than could be dreamed of by the alchemist. Pure gold cannot compare in value to the develop-

ments which are constantly coming from the laboratories. Chemistry may be likened to the sun of which Shakespeare speaks: 'The glorious sun stayed in its course to play alchemist, turning in splendor with his precious eye the meagre, cloddy earth to glittering gold.'

"We are indeed fortunate to be among those who have taken a part in this evolution in whatever way has been assigned to us. Ours is the responsibility to gain greater respect, greater confidence and greater acclaim."

Other speakers on the program were Williams Haynes, author, who reviewed the life and achievements of the medalist under the title, "Down East to Midwest," and Archie J. Weith, Bakelite Division of Carbide & Carbon Chemicals Corporation, who presented the medal to Mr. Rand. Dr. Gustavus J. Esselen, F.A.I.C., chairman of the American Section of the Society of Chemical Industry, presided.

Society for Applied Spectroscopy

A meeting of the Society for Applied Spectroscopy will be held March 8th, at Socony-Vacuum Training Center, 63 Park Row, New York, N.Y., at which Dr. Bert L. Vallee, Department of Biology, Massachusetts Institute of Technology, will speak on "Developments in a Backward Field—Trace Elements in Biology."

Information

"New Electrometer." Ask for Gray Covered Bulletin. Brown Instruments Division, Minneapolis-Honeywell Regulator Co., Philadelphia, Pa.

"McKee Automatic Gas-Fired Scotch Steam Pak Boiler." Bulletin A-104. Eclipse Fuel Engineering Co., 619 So. Main St., Rockford, Ill.

"New G & I 1950 Catalog." Medicinal chemicals and alkaloids. Gane & Ingram, Inc., 43 W. 16th St., New York 11, N.Y.

"Amberlite Ion Exchange Resins" Resinous Products Division of Rohm & Haas Co., Philadelphia, Pa.

"Hagan Ring Balance Meters Provide Automatic Compression for Pressure and Temperature." Bulletin M-51, Hagan Corp., Hagan Bldg., Pittsburgh 30, Pa.

"Drew System of Complete Boiler Water Treatment." Power Chemicals Division, E. F. Drew & Co., Inc., 15 E. 26th New York 10, NY.

"Fel-Pro Type H-P Seal." Pressure seals. Felt Products Mfg. Co., Packing Division, 1508 Carrol Ave., Chicago 7, Illinois.

"The Interchemical Adherometer." Measures stripping force required to remove paint from metal test panel. Henry A. Gardner Lab., Inc., 4723 Elm St., Bethesda, Md.

"A Catalogue of Books." Includes old science. Suckling & Co., 13 Garrick St., London, W. C. 2, England.

"New Eriez Micro-Magnetic Separator." Automatic fine iron powders cleaner. Bulletin 554. The Eriez Mfg. Co., Erie, Pennsylvania.

"New Non-corrosive Utility Pump." Burgess-Parr Co., Freeport, Ill.

"Solvents and Solvent Oils Brochure." Pennsylvania Industrial Chemical Corp., Clairton, Pa.

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The Miner Laboratories

The development of black, hairy tongue by certain patients is attributed to the use of penicillin.

A man learns that, no matter how poor or mean another man may be, his friendship is worth more than his hate.

—Lions Drag

Both the advance of science and the application of science to industry, to medicine, and to agriculture depend on the quality and the quantity of scientists and engineers available in a nation.

—Dr James B. Conant, Hon. AIC.

It's thinking ahead that pays off; it wasn't raining when Noah built the ark.

—Weekly Bulletin

Monosodium glutamate (MSG), according to a recent ruling by the Food and Drug Administration, has no flavor of its own but intensifies natural flavors.

From one barrel of crude oil, on the basis of the average refinery yields of 1948, came all of these things: enough gasoline to operate a popular-make automobile for 255 miles; enough lubricating oil to fill a crankcase, good for a minimum of 1,000 miles; enough distillates to supply an average home with heat and hot water for two days; enough residuals which, when converted to electricity, will furnish an average home with electricity for approximately twenty days; enough kerosine to run a farm tractor for seventy-five minutes, and about four gallons of heavy bottoms which can be turned into asphalt, petroleum coke, or a variety of things.

—Petroleum Newsnotes

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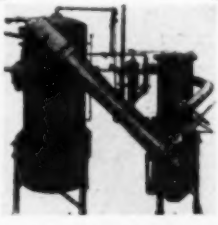

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THE CHEMIST on Microfilm

Subscribers to THE CHEMIST, who have space or storage problems, can now obtain microfilm copies of this publication from University Microfilms, 313 N. First Street, Ann Arbor, Michigan. Volume XXVI, Nos. 1 to 12, (1949), of THE CHEMIST is now available at $1.50.

National Council Meetings

Meetings of the AIC National Council will be held at The Chemists' Club, 52 E. 41st St., New York, N.Y., on:

March 14, 1951
April 11, 1951
May (Date not set)
June 13, 1951

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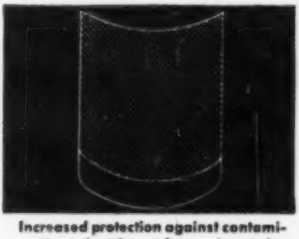
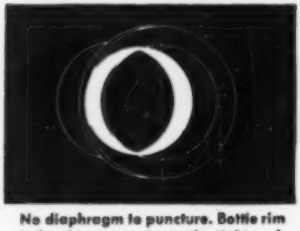
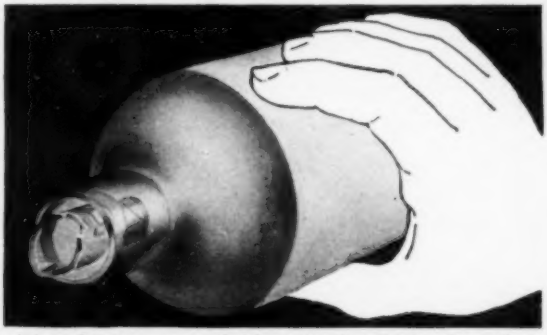


Increased protection against contamination—bottle and pouring tube (both polyethylene) are inert to Baker Reagent 49-52% Hydrofluoric Acid.



No diaphragm to puncture. Bottle rim is fitted to groove in cap for tight seal.



The development of this polyethylene bottle with its built-in drain-back spout and 6 distinctive features is just another example of the care Baker takes to safeguard the quality of its Laboratory Chemicals.

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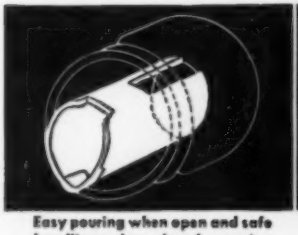
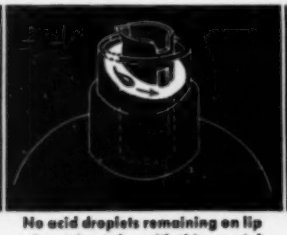
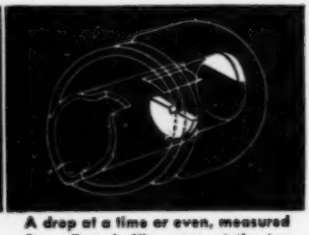


Easy pouring when open and safe handling when closed—pouring tube is completely enclosed by cap and outer sleeve of bottle rim.



No acid droplets remaining on lip of pouring tube with this special drain-back channel—added protection for the user.



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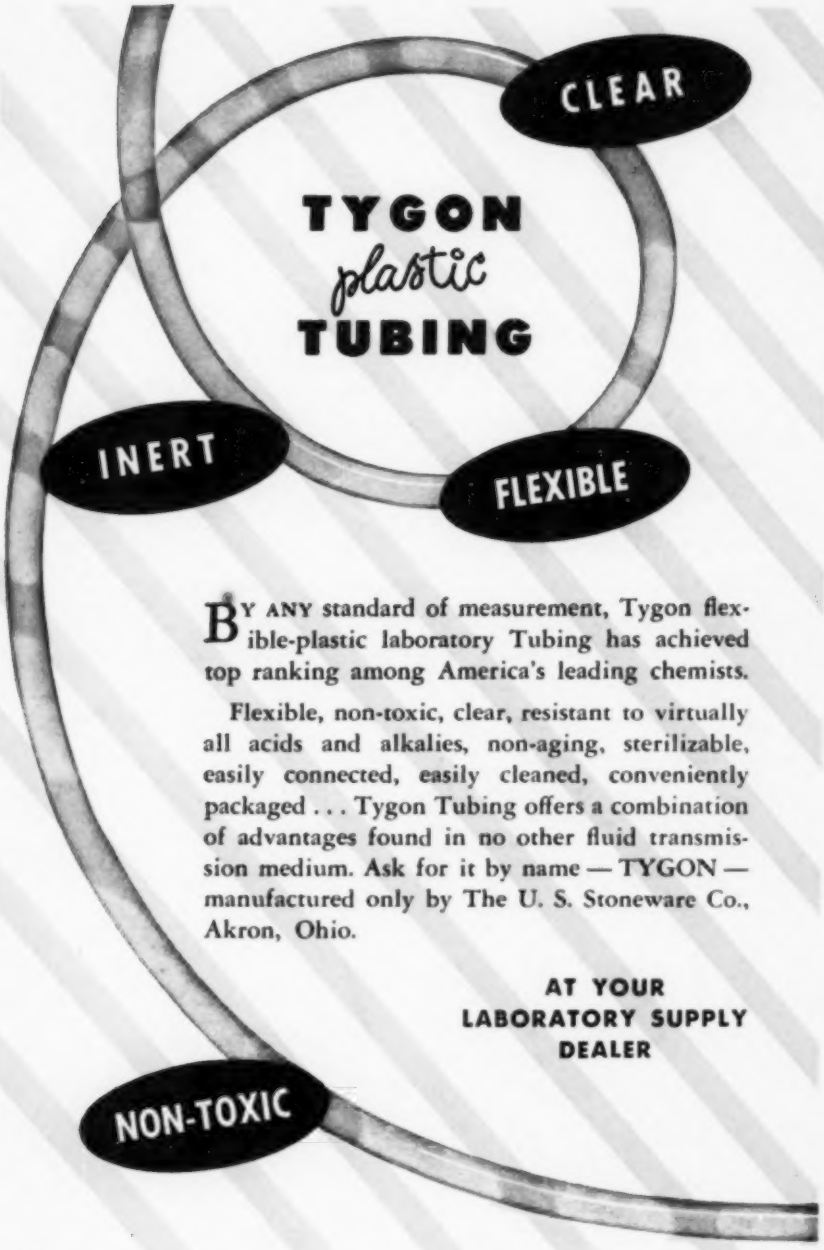

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